IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.:	10/068755	Confirmation No.:	9286
Applicant:	DENT, *et al.*		
Filed:	16/MAY/2002		
TC/A.U.:	2811		
Examiner:	Im, Junghwa M		
Docket No.:	DC4968 NP 1		
Customer No.:	00137		
Date:	25 January 2005		
For:	Semiconductor Package and Method of Preparing Same		

Commissioner for Patents
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APPEAL BRIEF

Real Party in Interest

The real party in interest in this appeal is Dow Corning Corporation, the assignee of the above application.

Related Appeals and Interferences

Appellants are not aware of any related appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-29 were originally filed in this application. Claims 15-19 and 23-25 were amended and claims 20-22 were canceled in a preliminary amendment dated 22 April 2003. Claims 30-32 were added by an amendment dated 11 August 2003. Claims 1 and 14 were amended by an

amendment dated 23 June 2004. Claims 1 and 14 were amended by an amendment dated 2 August 2004. Claims 1-19 and 23-32 are pending in this application and were finally rejected in the office action dated 11 January 2005.

Status of Amendments

A preliminary amendment was submitted on 22 April 2003. The Examiner entered this preliminary amendment. An amendment under 37 C.F.R. §1.111 was submitted on 11 August 2003. The Examiner entered this amendment. An amendment under 37 C.F.R. §1.116 was submitted on 23 June 2004. The Examiner did not enter this amendment. A Request for Continued Examination with the amendment under 37 C.F.R. §1.116 as the submission was submitted on 2 August 2004. The Examiner entered this amendment. No other amendments have been submitted subsequent to the Final Rejection dated 11 January 2005. The appealed claims 1-19 and 23-32 are in Appendix A of this brief.

Summary of the Invention

Appellants' invention relates to a semiconductor package comprising:

a semiconductor wafer having an active surface comprising at least one integrated circuit, wherein each integrated circuit has a plurality of bond pads; and

at least one cured silicone member covering at least a portion of the active surface, wherein at least a portion of each bond pad is not covered by the silicone member, the silicone member has a coefficient of linear thermal expansion of from 60 to 280 μm/m°C between -40 and 150 °C and a modulus of from 1 to 300 MPa at 25 °C, and the silicone member is prepared by a method comprising the steps of:

(i) printing a silicone composition on the active surface to form a silicone deposit, wherein the silicone composition comprises:

(A) an organopolysiloxane containing an average of at least two silicon-bonded alkenyl groups per molecule with any remaining silicon-bonded organic groups being independently selected from monovalent hydrocarbon groups free of aliphatic

unsaturation or monovalent halogenated hydrocarbon groups free of aliphatic unsaturation,

(B) an organohydrogensiloxane containing an average of at least two silicon-bonded hydrogen atoms per molecule in a concentration sufficient to cure the composition,

(C) an effective amount of an inorganic filler having a surface area less than 25 m^2/g, and

(D) a catalytic amount of a hydrosilylation catalyst; and

(ii) heating the silicone deposit for an amount of time sufficient to form the cured silicone member (paragraphs [0036] to [0044] in U.S. Patent Application Publication No. 2003/0214051 A1).

Appellants' invention further relates to a method of preparing the semiconductor package, the method comprising the steps of:

(i) printing a silicone composition on at least a portion of an active surface of a semiconductor wafer to form at least one silicone deposit, wherein the active surface comprises at least one integrated circuit, each integrated circuit has a plurality of bond pads, at least a portion of each bond pad is not covered by the silicone deposit, and the silicone composition comprises:

(A) an organopolysiloxane containing an average of at least two silicon-bonded alkenyl groups per molecule with any remaining silicon-bonded organic groups being independently selected from monovalent hydrocarbon groups free of aliphatic unsaturation or monovalent halogenated hydrocarbon groups free of aliphatic unsaturation,

(B) an organosilicon compound containing an average of at least two silicon-bonded hydrogen atoms per molecule in a concentration sufficient to cure the composition,

(C) an effective amount of an inorganic filler having a surface area less than 25 m^2/g, and

(D) a catalytic amount of a hydrosilylation catalyst; and

(ii) heating the silicone deposit for an amount of time sufficient to form a cured silicone member, wherein the member has a coefficient of linear thermal expansion of from 60 to 280 μm/m°C between -40 and 150 °C and a modulus of from 1 to 300 MPa at 25 °C (paragraphs [0095] to [0101] in U.S. Patent Application Publication No. 2003/0214051 A1).

Issues

1. Whether claims 1-12 are nonobvious over EP 1071117 to Amako, *et al.* ("Amako"), in view of U.S. Patent 6,083,74 to Shiobara, *et al.* ("Shiobara") under 35 U.S.C. §103(a).

2. Whether claim 13 is nonobvious over Amako, in view of Shiobara as applied to claim 1, and further in view of U.S. Patent 6,284,563 to Fjelstad ("Fjelstad") under 35 U.S.C. §103(a).

3. Whether claims 14-19 and 23-32 are nonobvious over Fjelstad in view of Amako and Shiobara under 35 U.S.C. §103(a).

Grouping of Claims

Claims 1-19 and 23-32 are pending in the instant application and are the subject of this appeal. Claims 1-13 should be grouped together for purposes of this appeal. If a ground of rejection for claim 1 is sustained, then it will be equally applicable to claims 2-12. Claims 14-19 and 23-32 should be grouped together for purposes of this appeal. If a ground of rejection for claim 14 is sustained, then it will be equally applicable to claims 14-19 and 23-32.

Argument

Claims 1-13 should be grouped separate from claims 14-19 and 23-32 because the reasons why claims 1-13 are nonobvious differ from the reasons why claims 14-19 and 23-32 are nonobvious, as set forth below.

1. Whether claims 1-12 are nonobvious over EP 1071117 to Amako, et al. ("Amako"), in view of U.S. Patent 6,083,74 to Shiobara, et al. ("Shiobara") under 35 U.S.C. §103(a).

The examiner rejected claims 1-12 under 35 U.S.C. §103(a) as being unpatentable over Amako in view of Shiobara because the Examiner believes that Figure 1 of Amako shows a semiconductor wafer with an active surface comprising an integrated circuit (an inherent element to operate functionally), bonding pads (which are needed for an electrical connection), and a cured silicone covering a portion of the active surface, and the silicone member comprising (A) an organopolysiloxane containing an average of at least two silicon-bonded alkenyl groups per molecule with any remaining silicon-bonded organic groups being independently selected from monovalent hydrocarbon groups free of aliphatic unsaturation, (B) an organohydrogensiloxane containing an average of at least two silicon-bonded hydrogen atoms per molecule, (C) an inorganic filler, and (D) a hydrosilylation catalyst, and heating the silicone deposit to form the cured silicone member. The Examiner concludes that Amako discloses a cured silicone member having the same composition as Applicant's disclosure, and it is inherent or alternatively obvious that the cured silicone of Amako has a coefficient of linear expansion and a modulus in a vicinity of the range recited in the pending claim.

The Examiner further argues that Amako substantially the entire claimed structure. However, the Examiner admits that Amako fails to disclose an inorganic filler with a surface area less than 25 m^2/g. The Examiner further argues that Shiobara discloses a filler used in a curable resin and having a surface area less than 25 m^2/g for semiconductor packaging. The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a proper particle size distribution for the cured silicone based on the disclosure of Shiobara to a semiconductor device of Amako. The Examiner further argues that a particular size of the filler can be determined based on the configuration of the semiconductor device.

Amako discloses a curable organopolysiloxane composition comprising (A) an organopolysiloxane containing an average of at least two alkenyl groups and at least two silicon-bonded hydrogen atoms per molecule, (B) a compound containing alkenyl and hydroxyphenyl groups in each molecule, and (C) a hydrosilylation catalyst (paragraph [0008]). The composition may contain reinforcing fillers for the purpose of improving the strength (paragraph [0038]). Amako further discloses a unified article comprising a substrate and a cured product of the organopolysiloxane composition (paragraph [0040] and Figure 1). The unified article may be an epoxy resin substrate having a silicon chip thereon and a cured product of the organopolysiloxane composition (Figure 1). The problem to be solved by Amako is to provide a curable organopolysiloxane composition wherein the silicone component that out-migrates by effusion from the composition is highly curable and adherent to a variety of substrates and the organopolysiloxane composition has excellent adhesion to a wide variety of substrates (paragraphs [0004] and [0006]).

Shiobara discloses a method for fabricating semiconductor devices of the flip-chip design (col. 1, lines 4-5). The problem to be solved by Shiobara is to provide a method, which ensures the space between a substrate and a semiconductor chip is filled with a resin encapsulant without generating voids and without damaging solder bumps, and which ensures encapsulation is completed within a short time (col. 1, lines 29-37). Shiobara discloses an encapsulating resin composition comprising an epoxy resin, a curing agent, and an inorganic filler (col. 1, lines 61-64). The inorganic filler has a particle size distribution selected to prevent voids and solder bump failure and viscosity increase, which requires to increase molding pressure, sometimes causing solder bump failure (col. 7, lines 1-19). Shiobara does not disclose any silicone compositions.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine

reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicant's disclosure MPEP §2142, 2143. Even where the combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper MPEP §2143.01. The level of skill in the art cannot be relied upon to provide the suggestion to combine references MPEP §2143.01. The Patent Office must identify where the prior art provides a motivating suggestion to make the necessary modifications In re Jones, 21 U.S.P.Q. 2d 1941, Fed. Cir. 1992. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination MPEP §2143.01, In re Fritch, 23 U.S.P.Q. 2d 1780, Fed. Cir. 1992.

Nothing in the disclosures of Amako and Shiobara would motivate one skilled in the art to combine them. The problem to be solved by Amako is to provide a curable organopolysiloxane composition wherein the silicone component that out-migrates by effusion from the composition is highly curable and adherent to a variety of substrates and the organopolysiloxane composition has excellent adhesion to a wide variety of substrates (paragraphs [0004] and [0006]). The problem to be solved by Shiobara is to provide a method, which ensures the space between a substrate and a semiconductor chip is filled with a resin encapsulant without generating voids and without damaging solder bumps, and which ensures encapsulation is completed within a short time (col. 1, lines 29-37). Shiobara does not teach or suggest any silicone compositions. Nothing in the disclosure of Shiobara teaches or suggests that the inorganic filler in the epoxy resin composition of Shiobara would provide the benefit that a silicone component that out-migrates by effusion from a curable organopolysiloxane composition is highly curable and adherent. Nothing in the disclosures of either Amako or Shiobara teaches or suggests that the

inorganic filler in the epoxy resin composition of Shiobara would provide any benefit to a curable organopolysiloxane composition.

The first criterion for establishing a *prima facie* case of obviousness has not been met because there is no suggestion or motivation in either Amako or Shiobara to combine the disclosures of Amako and Shiobara because the problems to be solved differ. Furthermore, there is no motivation to modify the composition of Amako to include the filler from the epoxy resin composition of Shiobara because nothing in the disclosures of Amako or Shiobara teaches or suggests that any benefit to the curable organopolysiloxane composition would be obtained by adding a filler from an epoxy resin composition.

Claim 1 of this invention relates to a semiconductor package comprising:

a semiconductor wafer having an active surface comprising at least one integrated circuit, wherein each integrated circuit has a plurality of bond pads; and

at least one cured silicone member covering at least a portion of the active surface, wherein at least a portion of each bond pad is not covered by the silicone member, the silicone member has a coefficient of linear thermal expansion of from 60 to 280 μm/m°C between -40 and 150 °C and a modulus of from 1 to 300 MPa at 25 °C, and the silicone member is prepared by a method comprising the steps of:

(i) printing a silicone composition on the active surface to form a silicone deposit, wherein the silicone composition comprises:

(A) an organopolysiloxane containing an average of at least two silicon-bonded alkenyl groups per molecule with any remaining silicon-bonded organic groups being independently selected from monovalent hydrocarbon groups free of aliphatic unsaturation or monovalent halogenated hydrocarbon groups free of aliphatic unsaturation,

(B) an organohydrogensiloxane containing an average of at least two silicon-bonded hydrogen atoms per molecule in a concentration sufficient to cure the composition,

(C) an effective amount of an inorganic filler having a surface area less than 25 m^2/g, and

(D) a catalytic amount of a hydrosilylation catalyst; and

(ii) heating the silicone deposit for an amount of time sufficient to form the cured silicone member.

Regarding the second criterion for establishing a *prima facie* case of obviousness, references can be modified or combined to reject claims only if there is a reasonable expectation of success MPEP §2143.02. At least some degree of predictability is required MPEP §2143.02. Evidence showing there was no reasonable expectation of success may support a conclusion of nonobviousness MPEP §2143.02. Whether an art is predictable or whether the proposed modification or combination of the prior art has a reasonable expectation of success is determined at the time the invention was made MPEP §2143.02.

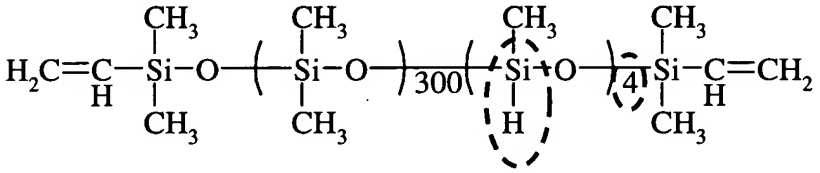
Nothing in the disclosure of Amako teaches or suggests removing Amako's required component A and replacing it with a different organopolysiloxane that would correspond to component (A) of this invention. Nothing in the disclosure of Amako or Shiobara teaches or suggests that the filler from the epoxy resin composition of Shiobara would provide any benefit to the curable organopolysiloxane composition of Amako or any curable organopolysiloxane composition. Nothing in the disclosure of Amako or Shiobara teaches or suggests that the filler from the epoxy resin composition of Amako would provide any benefit to a cured silicone member in a semiconductor package. Nothing in the disclosures of Amako and Shiobara teaches or suggests this invention. Therefore, the second criterion for establishing a *prima facie* case of obviousness has not been met because at least some degree of predictability is required MPEP §2143.02, but none is present here.

To establish the third criterion of a *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art MPEP §2143.03. All words in a claim must be considered in judging the patentability of that claim against the prior art MPEP §2143.03.

Even if one skilled in the art combined the disclosures of Amako and Shiobara, by adding a filler having a particle size disclosed by Shiobara to the curable organopolysiloxane composition of Amako, this would not meet the third criterion for a *prima facie* case of obviousness because not all of the claim limitations would be taught or suggested. The composition of Amako lacks component (A) used in the composition in the semiconductor package of claim 1. Component A of Amako has both alkenyl and silicon-bonded hydrogen atoms in the same molecule. Component (A) of this invention has alkenyl groups and other organic groups bonded to silicon atoms (paragraph [0050] of U.S. Patent Application Publication No. 2003/0214051 A1). Based on the specification, one skilled in the art would recognize that component (A) of this invention does **not** contain silicon-bonded hydrogen atoms, as required for component A of Amako. Adding the a filler with a particle size disclosed by Shiobara to the composition of Amako does not cure this defect. Shiobara does not disclose any components corresponding to component (A) required by this invention. Adding a filler from the epoxy resin composition of Shiobara to the curable organopolysiloxane composition of Amako does not teach or suggest component (A) of this invention.

In response to this, the Examiner further argued that "the detailed chemical structure, such as the first example of organopolysiloxanes in paragraph [0020] of Amoko (*sic*) shows any remaining silicon-boned (*sic*) groups are comprised of monovalent hydrocarbon groups free of aliphatic unsaturation. It is noted that the silicon bonded hydrogen atom of Amoko (*sic*) is not boned (*sic*) to a remaining silicon bonded portion."

The Appellants rebut this argument because component (A) of this invention is an organopolysiloxane having silicon-bonded alkenyl groups and silicon-bonded organic groups being independently selected from monovalent hydrocarbon groups free of aliphatic unsaturation or monovalent halogenated hydrocarbon groups free of aliphatic unsaturation (paragraph [0050] of U.S. Patent Application Publication No. 2003/0214051 A1). Component (A) is separate from component (B) of this invention, and component (B) contains an average of at least two silicon-bonded hydrogen atoms per molecule. The silicon-bonded hydrogen atoms are in component (B), not component (A) (paragraph [0056] of U.S. Patent Application Publication No. 2003/0214051 A1). Component (A) of this invention does **not** contain silicon-bonded hydrogen atoms, see paragraphs [0050] to [0053] and [0136] to [0139] of U.S. Patent Application Publication No. 2003/0214051 A1. However, component A of Amako requires silicon-bonded hydrogen atoms (Abstract). This is exemplified in the structure at paragraph [0020] of Amako cited by the Examiner and reproduced below.



As can be seen, this structure contains 4 silicon bonded hydrogen atoms. In contrast, component (A) of this invention does **not** contain silicon-bonded hydrogen atoms for the reasons discussed above. Therefore, component A of Amako differs from component (A) of this invention, and Amako teaches away from this invention because Amako requires component A of Amako to contain silicon-bonded hydrogen atoms.

Furthermore, neither Amako nor Shiobara disclose any semiconductor wafers. One skilled in the art would recognize that the silicon chips in Figure 1 of Amako and in Shiobara are not wafers. Neither Amako nor Shiobara teaches or suggests a cured silicone member covering at least a portion of an active surface of a wafer where at least a portion of each bond pad is not covered by the silicone member. For these reasons, Amako and Shiobara fail to teach or suggest all of the

limitations of claim 1, therefore, the third criterion for establishing a *prima facie* case of obviousness has not been met.

Claim 1 is not obvious over Amako in view of Shiobara because none of the criteria for establishing a *prima facie* case of obviousness have been satisfied for the reasons discussed above.

The Examiner further argues regarding claim 2 that it is obvious that the wafer further comprises streets for separation of devices on a wafer. The Examiner further argues regarding claim 3 that it would have been obvious to have a thickness of the cured silicone from 20 to 200 micrometers to provide an effective engagement between a subassembly and a device, even though the Examiner admits that Amako does not teach the thickness of the cured silicone. The Examiner further argues regarding claim 4 that Amako discloses a composition of the organohydrogensiloxane to offset an alkenyl group. The Examiner further argues regarding claims 5 and 6 that Shiobara discloses an inorganic silica filler with the surface area within the recited limitation. The Examiner further argues regarding claim 7-9 that Amako discloses a concentration of a hydrosilylation catalyst inhibitor within the recited range. The Examiner further argues regarding claim 10 that Amako discloses the semiconductor package further comprises an organopolysiloxane resin consisting essentially of $R^3SiO_{1/2}$ units and $SiO_{4/2}$ units wherein R^3 is independently selected from monovalent hydrocarbon and monovalent halogenated hydrocarbon groups. The Examiner further argues regarding claims 11-12 that Figure 1 of Amako discloses a packaging device further comprising a cured organopolysiloxane dome layer.

If an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious MPEP §2143.03. Claims 2-12 are not obvious because each of claims 2-12 depends on claim 1. Therefore, claims 1-12 are nonobvious under 35 U.S.C. §103(a).

2. Whether claim 13 is nonobvious over Amako, in view of Shiobara as applied to claim 1, and further in view of U.S. Patent 6,284,563 to Fjelstad ("Fjelstad") under 35 U.S.C. §103(a).

The Examiner rejected claim 13 under 35 U.S.C. §103(a) over Amako and Shiobara as applied to claim 1 above and further in view of Fjelstad because the Examiner believes Amako and Shiobara show a silicon wafer with a structure substantially identical to the present invention except for connection of a metal trace. The Examiner further argues that Fjelstad shows a semiconductor package comprising a semiconductor wafer having an active surface comprising at least one integrated circuit, wherein each integrated circuit has a plurality of bond pads, a cured silicone layer with a thickness range of 74-200 micrometers covering a portion of the active surface of the wafer except the bond pads, and a metal trace having a proximal end attached to each bond pad and a distal end lying on the surface of the cured silicone layer. The Examiner concludes that it would have been obvious to have a connection of the metal trace to a bond pad and a cured silicone layer because such a configuration alleviates stresses created between the substrate and the chip.

Claim 13 is not obvious for the same reasons discussed above for claims 1-12. The disclosure of a metal trace by Fjelstad does not cure the deficiencies of Amako in view of Shiobara discussed above. Claim 13 is not obvious over Amako in view of Shiobara and further in view of Fjelstad because none of the criteria for a *prima facie* case of obviousness have been established.

3. Whether claims 14-19 and 23-32 are nonobvious over Fjelstad in view of Amako and Shiobara under 35 U.S.C. §103(a).

The Examiner rejected claims 14-19 and 23-32 under 35 U.S.C. §103(a) over Fjelstad in view of Amako and Shiobara. The Examiner argues that it would have been obvious at the time the invention was made to utilize the disclosures of Amako and Shiobara for the compliant layer of Fjelstad to have the cured silicone layer with a specific composition as recited in the pending claim. The Examiner admits that Fjelstad fails to teach a specific silicone composition. The

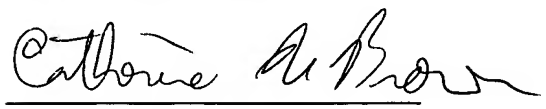
Examiner relies on Amako in view of Shiobara as discussed above for the specific silicone composition.

The combination of Fjelstad in view of Amako and Shiobara fails to meet the criteria to establish a *prima facie* case of obviousness for claims 14-19 and 23-32 for the same reasons discussed above for claims 1-13. Amako does not disclose the silicone composition of this invention, the cured member prepared from this composition, a semiconductor wafer, an active surface, at least one integrated circuit, a plurality of bond pads, or the cured silicone member covering at least a portion of the active surface where at least a portion of each bond pad is not covered by the silicone member. Fjelstad and Shiobara fail to remedy these deficiencies. Furthermore, none of Fjelstad, Amako, and Shiobara disclose printing any silicone composition. Shiobara teaches away from printing because Shiobara discloses transfer molding. A *prima facie* case of obviousness has not been established under MPEP §2143 because not all of the claim limitations are taught or suggested by the references.

If an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious MPEP §2143.03. Claims 15-19 and 23-32 are not obvious because each of these claims depends on claim 14. Therefore, claims 15-19 and 23-32 are nonobvious under 35 U.S.C. §103(a).

Based on the above arguments, the Appellants respectfully request that the Examiner's rejections of claims 1-19 and 23-32 in the present application be reversed and that the claims be allowed.

Respectfully Submitted,
Dow Corning Corporation



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Appendix A: Claims

1. A semiconductor package comprising:

a semiconductor wafer having an active surface comprising at least one integrated circuit, wherein each integrated circuit has a plurality of bond pads; and

at least one cured silicone member covering at least a portion of the active surface, wherein at least a portion of each bond pad is not covered by the silicone member, the silicone member has a coefficient of linear thermal expansion of from 60 to 280 μm/m°C between -40 and 150 °C and a modulus of from 1 to 300 MPa at 25 °C, and the silicone member is prepared by a method comprising the steps of:

(i) printing a silicone composition on the active surface to form a silicone deposit, wherein the silicone composition comprises:

(A) an organopolysiloxane containing an average of at least two silicon-bonded alkenyl groups per molecule with any remaining silicon-bonded organic groups being independently selected from monovalent hydrocarbon groups free of aliphatic unsaturation or monovalent halogenated hydrocarbon groups free of aliphatic unsaturation,

(B) an organohydrogensiloxane containing an average of at least two silicon-bonded hydrogen atoms per molecule in a concentration sufficient to cure the composition,

(C) an effective amount of an inorganic filler having a surface area less than 25 m^2/g, and

(D) a catalytic amount of a hydrosilylation catalyst; and

(ii) heating the silicone deposit for an amount of time sufficient to form the cured silicone member.

2. The semiconductor package according to claim 1, wherein the wafer further comprises streets.

3. The semiconductor package according to claim 1, wherein the cured silicone member has a thickness of from 10 to 200 μm.

4. The semiconductor package according to claim 1, wherein the concentration of component (B) is sufficient to provide from 0.8 to 1.5 silicon-bonded hydrogen atoms per alkenyl group in component (A).

5. The semiconductor package according to claim 1, wherein the inorganic filler has surface area of from 0.25 to 10 m^2/g.

6. The semiconductor package according to claim 1, wherein the inorganic filler is fused silica.

7. The semiconductor package according to claim 1, wherein the concentration of component (C) is from 100 to 600 parts by weight per 100 parts by weight of component (A).

8. The semiconductor package according to claim 1, wherein the hydrosilylation catalyst comprises platinum.

9. The semiconductor package according to claim 1, wherein the silicone composition further comprises a hydrosilylation catalyst inhibitor.

10. The semiconductor package according to claim 1, further comprising an organopolysiloxane resin consisting essentially of $R^3{}_3SiO_{1/2}$ siloxane units and $SiO_{4/2}$ siloxane units wherein each R^3 is independently selected from monovalent hydrocarbon and monovalent halogenated hydrocarbon groups having from 1 to 20 carbon atoms and the mole ratio of $R^3{}_3SiO_{1/2}$ units to $SiO_{4/2}$ units in the organopolysiloxane resin is from 0.65 to 1.9.

11. The semiconductor package according to claim 1, wherein the cured silicone member is a cured silicone layer.

12. The semiconductor package according to claim 1, wherein the cured silicone member is a cured silicone dome.

13. The semiconductor package according to claim 1, further comprising a metal trace having a proximal end attached to each bond pad and a distal end lying on the surface of the cured silicone member.

14. A method of preparing a semiconductor package, the method comprising the steps of:

(i) printing a silicone composition on at least a portion of an active surface of a semiconductor wafer to form at least one silicone deposit, wherein the active surface comprises at least one integrated circuit, each integrated circuit has a plurality of bond pads, at least a portion of each bond pad is not covered by the silicone deposit, and the silicone composition comprises:

(A) an organopolysiloxane containing an average of at least two silicon-bonded alkenyl groups per molecule with any remaining silicon-bonded organic groups being independently selected from monovalent hydrocarbon groups free of aliphatic unsaturation or monovalent halogenated hydrocarbon groups free of aliphatic unsaturation,

(B) an organosilicon compound containing an average of at least two silicon-bonded hydrogen atoms per molecule in a concentration sufficient to cure the composition,

(C) an effective amount of an inorganic filler having a surface area less than 25 m^2/g, and

(D) a catalytic amount of a hydrosilylation catalyst; and

(ii) heating the silicone deposit for an amount of time sufficient to form a cured silicone member, wherein the member has a coefficient of linear thermal expansion of from 60 to 280 μm/m°C between -40 and 150 °C and a modulus of from 1 to 300 MPa at 25 °C.

15. The method according to claim 14, wherein the wafer further comprises streets.

16. The method according to claim 14, wherein the cured silicone member has a thickness of from 10 to 200 μm.

17. The method according to claim 14, wherein the concentration of component (B) is sufficient to provide from 0.8 to 1.5 silicon-bonded hydrogen atoms per alkenyl group in component (A).

18. The method according to claim 14, wherein the inorganic filler has surface area of from 0.25 to 10 m^2/g.

19. The method according to claim 14, wherein the inorganic filler is fused silica.

23. The method according to claim 14, wherein the silicone composition further comprises an organopolysiloxane resin consisting essentially of $R^3{}_3SiO_{1/2}$ siloxane units and $SiO_{4/2}$ siloxane units wherein each R^3 is independently selected from monovalent hydrocarbon and monovalent halogenated hydrocarbon groups having from 1 to 20 carbon atoms and the mole ratio of $R^3{}_3SiO_{1/2}$ units to $SiO_{4/2}$ units in the organopolysiloxane resin is from 0.65 to 1.9.

24. The method according to claim 14, wherein the cured silicone member is a cured silicone layer.

25. The method according to claim 14, wherein the cured silicone member is a cured silicone dome.

26. The method according to claim 14, wherein the step of printing is carried out using stencil printing.

27. The method according to claim 14, wherein the step of printing is carried out using screen printing.

28. The method according to claim 14, wherein the step of heating the silicone deposit is carried out at a temperature of from 90 to 200 °C for 5 to 60 min.

29. The method according to claim 14, further comprising the step of forming a metal trace having a proximal end attached to each bond pad and a distal end lying on the surface of the cured silicone member.

30. The method according to claim 14, wherein the concentration of component (C) is from 100 to 600 parts by weight per 100 parts by weight of component (A).

31. The method according to claim 14, wherein the hydrosilylation catalyst comprises platinum.

32. The method according to claim 14, wherein the silicone composition further comprises a hydrosilylation catalyst inhibitor.

PTO/SB/17 (12-04v2)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Effective on 12/08/2004.
Fees Pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL
For FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT	($)	500.00

Complete if Known	
Application Number	10/068755
Filing Date	16/MAY/2002
First Named Inventor	DENT
Examiner Name	Im, Junghwa M
Art Unit	2811
Attorney Docket No.	DC4968

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☑ Deposit Account Deposit Account Number: 04-1520 Deposit Account Name: _____

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☑ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**

☑ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☐ Credit any overpayments

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES Fee ($)	FILING FEES Small Entity Fee ($)	SEARCH FEES Fee ($)	SEARCH FEES Small Entity Fee ($)	EXAMINATION FEES Fee ($)	EXAMINATION FEES Small Entity Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee ($)	Fee Paid ($)
_____ - 20 or HP =	_____ x	_____ =	_____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee ($)	Fee Paid ($)
_____ - 3 or HP =	_____ x	_____ =	_____

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims: Fee ($) _____ Fee Paid ($) _____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee ($)	Fee Paid ($)
_____ - 100 =	_____ / 50 =	_____ (round up to a whole number) x	_____ =	_____

4. OTHER FEE(S)

Non-English Specification, $130 fee (no small entity discount) Fees Paid ($) _____

Other (e.g., late filing surcharge): Appeal Brief $500.00

SUBMITTED BY

Signature	Catherine U Brown	Registration No. (Attorney/Agent) 44,565	Telephone 989-496-1725
Name (Print/Type)	Catherine U. Brown		Date 25 January 2005